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Coladenia wenhaoi sp. nov. from Guizhou, China (Lepidoptera: Hesperiidae)

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Abstract: *Coladenia wenhaoi* **sp. nov.** is described from Guizhou Province, China. The new species can be distinguished from the similar *C. koiwayai* Maruyama & Uehara, 2008 (distributed in northern Laos and northern Vietnam) by the yellow ventral side of palpi. Furthermore, the male genitalia exhibit several diagnostic characters: the markedly wider apex of the gnathos in ventral view, the longer valva, and the well-developed carina penis.

Keywords: China, *Coladenia*, Hesperiidae, new species

中国贵州省窗弄蝶属一新种（鳞翅目：弄蝶科）

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摘要：本文记述了采自贵州省的弄蝶科一新物种——文浩窗弄蝶（*Coladenia wenhaoi* **sp. nov.**）。该新种可通过以下特征与来自老挝北部和越南北部的小岩屋氏窗弄蝶（*Coladenia koiwayai* Maruyama & Uehara, 2008）相区分：下唇须腹面为黄色；颚形突腹面观尾端显著更宽；抱握瓣更长；以及阳茎脊突极为显著。

关键词：中国，窗弄蝶属，弄蝶科，新种

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Introduction

Following the revision (Huang 2021) of Chinese species of the skipper genus *Coladenia* Moore, [1881] in early 2022, the first author was alerted to photographs of an interesting male specimen collected from Jiangkou in eastern Guizhou. The specimen, initially posted online by Ms. Lan Zhang and brought to the first author's attention by Dr. Wen-Hao Sun, appeared to represent a species previously unknown in China. Communication with Ms. Zhang revealed that the specimen had been collected by Ms. X.-Y. Zheng under the guidance of the second author, prompting a collaboration between the first two authors.

Dissection and examination of the male genitalia confirmed the specimen as an undescribed species close to *Coladenia koiwayai* Maruyama & Uehara, 2008 from northern Laos and northern Vietnam. With the assistance of Mr. Kiyoshi Maruyama, the first author examined the male genitalia of two specimens of *Coladenia koiwayai* (holotype and paratype) and noted striking differences in the colour of the palpi and the fully developed carina penis of the aedeagus. However, with only a single male specimen available, the formal description of this potential new species was postponed, pending additional material.

Three years later, two female specimens were unexpectedly collected by Mr. Yan-Quan Lu from Yaoren-shan, Sandu, in southeastern Guizhou. Subsequently, the third author acquired two further males via eBay, collected from Congjiang in the same region. A joint study of all available specimens confirmed that they are consistent in the aforementioned characteristics and can be readily distinguished from *C. koiwayai* from northern Indochina.

The discovery of this new species in China further demonstrates that South China is one of the two primary centers of speciation for the genus, the other being the Philippines. The presence of only two endemic species in Sundaland may represent a relict of a terrestrial fauna that dispersed eastwards on continental fragments, such as those in northern Palawan, and subsequently became incorporated into the Philippine fauna (De Jong 1996).

Taxonomy

Coladenia wenhaoi sp. nov. 文浩窗弄蝶

https://zoobank.org/B324CC20-A046-4A52-80F6-B944B3A76CB6

Figs 1–4, 6, 10, 11–15, 21, 24, 26–28, 31, 33, 35

Holotype: ♂ (Length of forewing 20.5 mm): China, Guizhou, Tongren City, Jiangkou County, Pingding-gou, 14.V.2020, Xin-Yi Zheng leg. Deposited in the Institute of Entomology, Guizhou University, Guiyang, China.

Paratypes: 2 ♂♂ (collection of Z.J. Wu), Guizhou: Congjiang County, 800 m, IV.2025, purchased by Z.J. Wu from eBay; 2 ♀♀ (collection of H. Huang), Guizhou: Sandu County, Yaoren-shan, 910 m, 4.V.2025, Y.Q. Lu leg.

Etymology. The species is named after Dr. Wen-Hao SUN in gratitude for his various help to the first author.

Diagnosis. The new species is most similar to *Coladenia koiwayai* Maruyama & Uehara from N Laos and N Vietnam, but can be distinguished from the latter by the following combination of characters:

1) The ventral surface of all three palpal segments is covered with yellow scales, while in *C. koiwayai*, the first two segments are white and the third is blackish.

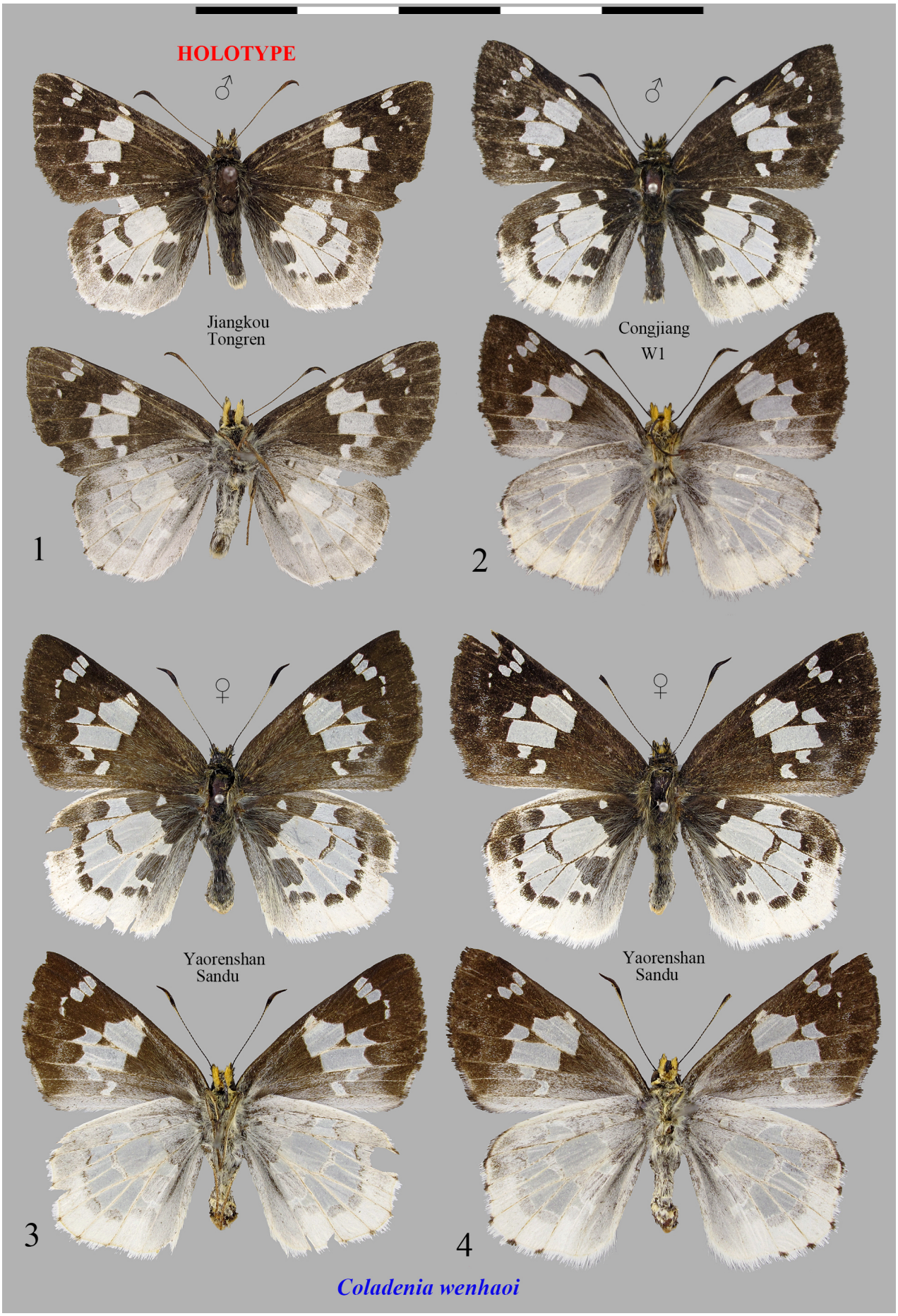
2) On the forewing underside, the inner edges of the central subhyaline markings are bordered by blackish-brown ground colour, whereas in *C. koiwayai* they are bordered by greyish ground colour.

3) The postdiscal black dots on the hindwing upperside, which border the central subhyaline patches, are situated closer to the wing termen than those in *C. koiwayai*.

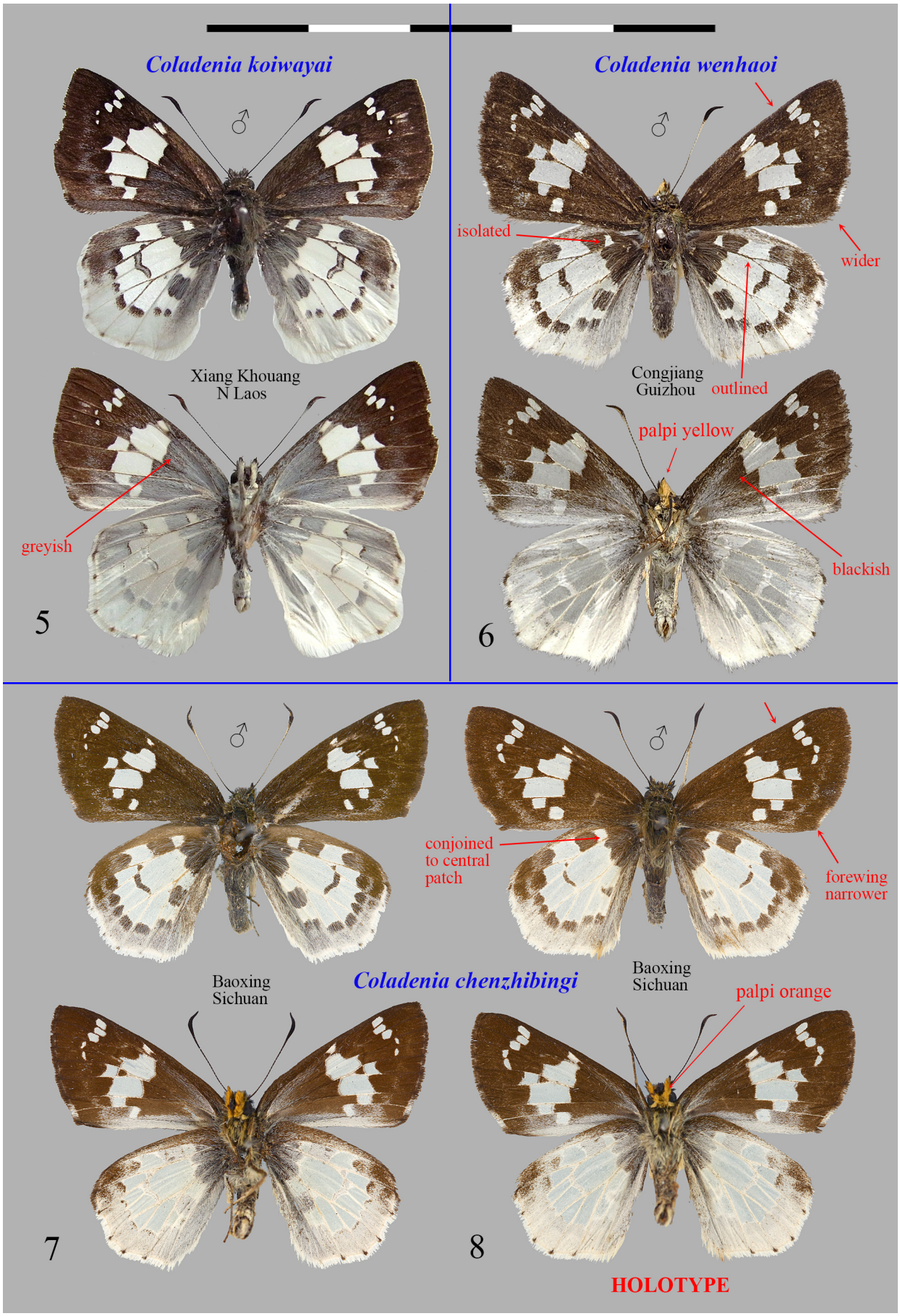
4) In the male genitalia, the valva is markedly longer.

5) In ventral view, the cochlear of the gnathos is markedly wider apically and somewhat squarish. In *C. koiwayai*, the cochlear is strongly constricted at the middle, resulting in a narrower apex.

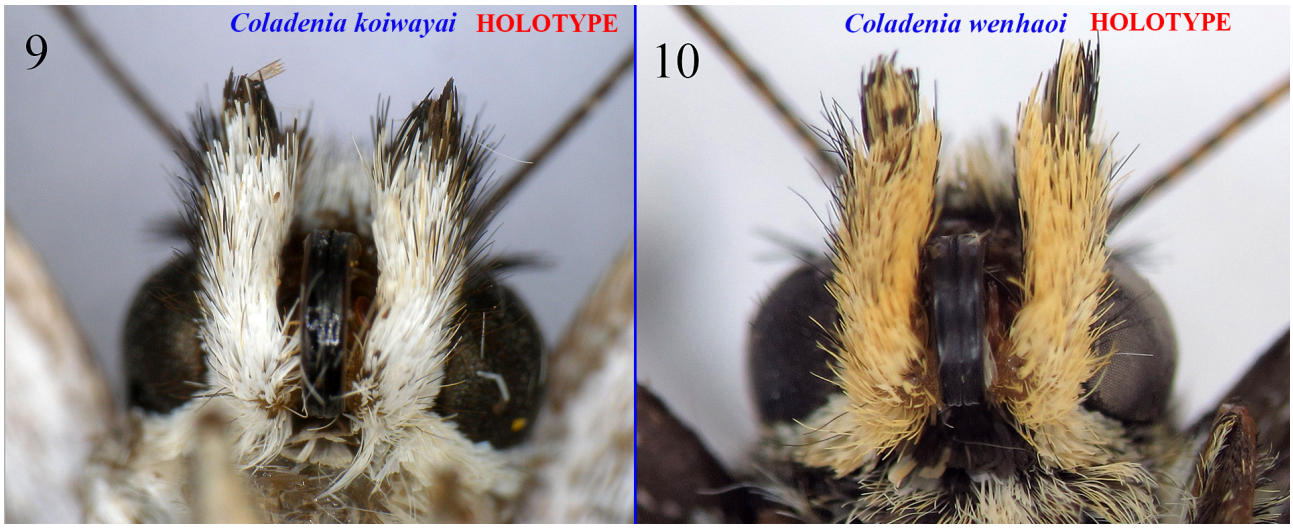
6) The aedeagus possesses a fully developed carina penis, whereas in *C. koiwayai* the carina penis is obsolete.



FIGURES 1–4. Habitus of *Coladenia wenhaoi* **sp. n.**, upperside & underside. Scale bar = 1 cm.



FIGURES 5-8. Habitus of *Coladenia wenhaoi* **sp. n.**, *C. koiwayai* and *C. chenzhibingi* under same scale. Scale bar = 1 cm



FIGURES 9–10. Palpi of *C. wenhaoi* **sp. n.** and *C. koiwayai* in ventral view.

Discussion. The new species also resembles *C. vitrea* Leech, 1893 and *C. chenzhibingi* Huang & Zhu, 2021 in possessing a conjoined large central subhyaline patch on the hindwing and an overall whitish ground color on the hindwing underside. Externally, it exhibits some intermediate characteristics: the palpi are yellow (compared to orange in *C. chenzhibingi* and white in *C. vitrea*); the central subhyaline patch on the hindwing upperside is smaller than that of *C. chenzhibingi* but larger than that of *C. vitrea*; and the veins within this patch are partly outlined by dark scales (while they are white in *C. chenzhibingi* and entirely blackish in *C. vitrea*). However, the male genitalia of the new species are remarkably different from those of *C. vitrea* and *C. chenzhibingi*, characterized by a much narrower basal part of the dorsal branch of the valva and a distal branch that does not extend dorsally into a long process.

Based on the structure of the valva in the male genitalia, this new species is likely more closely related to *C. koiwayai* than to *C. chenzhibingi* and *C. vitrea*. The similarity in wing patterns, palpi and male genitalia between the new species and *C. koiwayai* is notably analogous to that observed between *C. chenzhibingi* and *C. vitrea*. The phylogenetic relationships among these four allied species certainly warrant future clarification using molecular data.

It is worth noting that only two additional taxa of *Coladenia* have been described (Li *et al.* 2024; Zhang *et al.* 2025) since Huang's (2021) revision, which have no taxonomic bearing on the new species described herein.

Range. E & SE Guizhou.

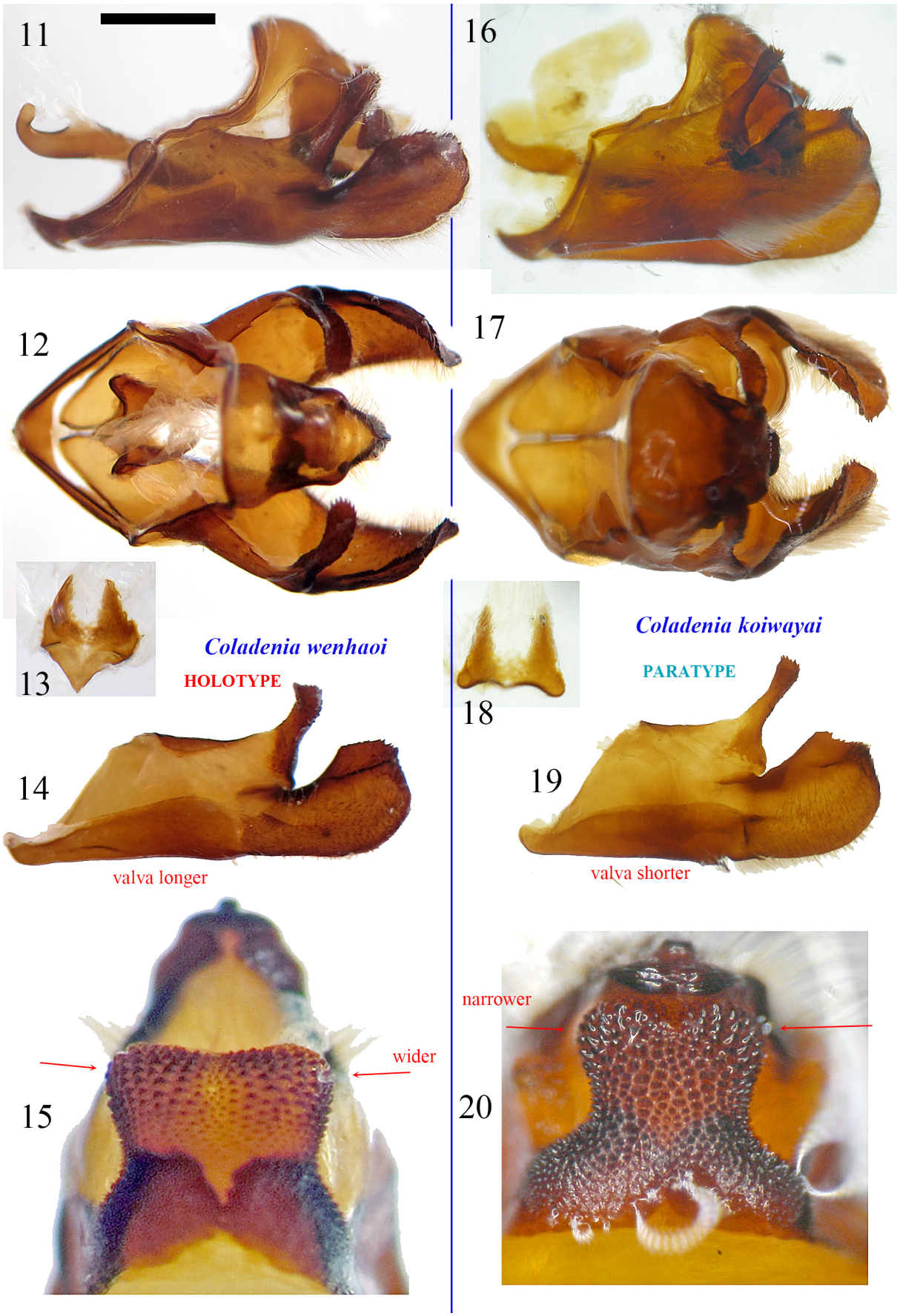
Coladenia koiwayai Maruyama & Uehara, 2008 小岩屋氏窗弄蝶

Figs 5, 9, 16–20, 22–23, 25, 32, 34

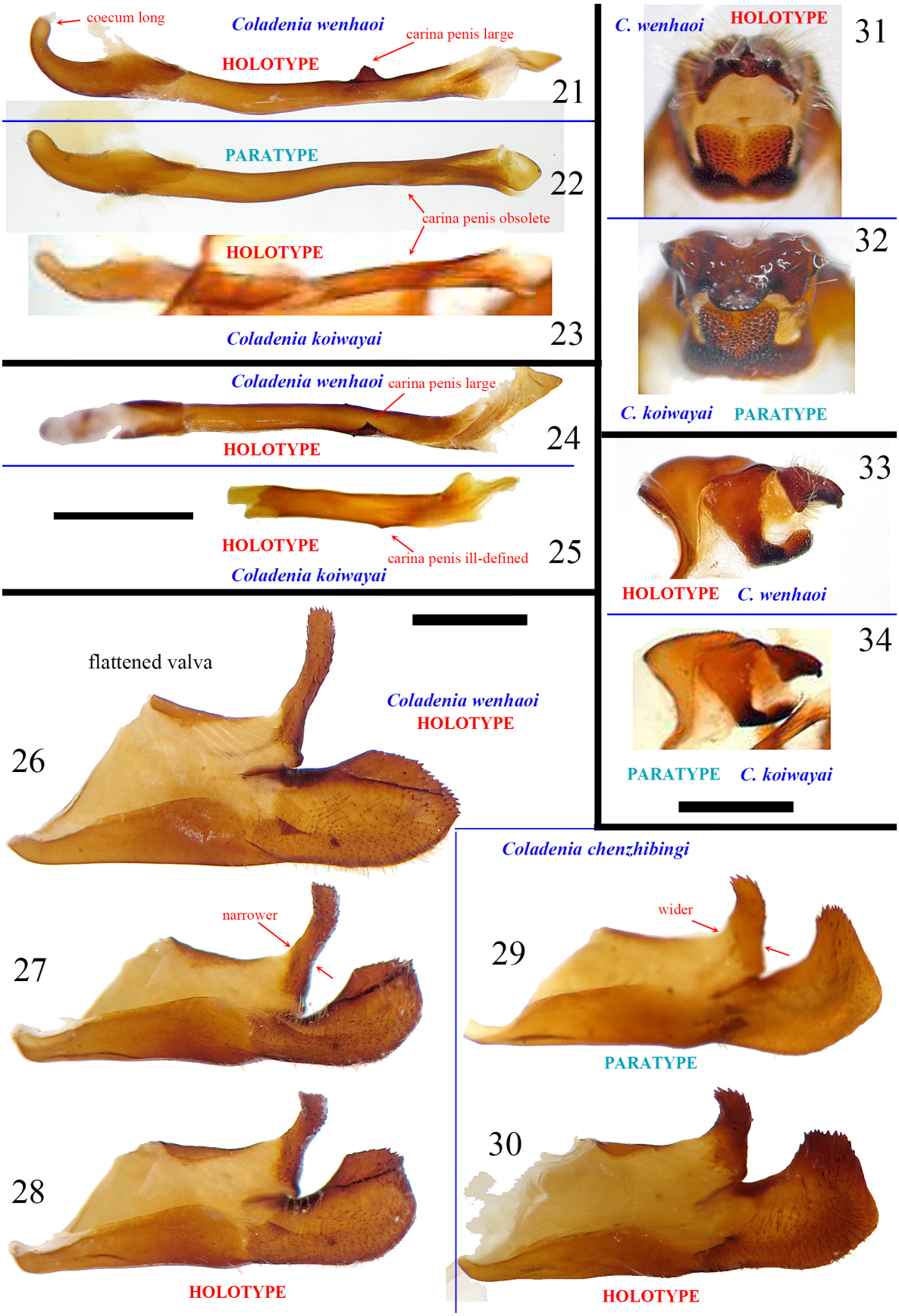
Coladenia koiwayai Maruyama & Uehara, 2008: 288 (type locality: Phu Pan, near Xamneua, N Laos), figs. for ♂ & ♀ habitus and ♂ genitalia; Devyatkin 2012: 151; Nakamura & Wakahara, 2012: 57, records from Phou Samsoum and Phou Pan, Laos; Onodera, 2022: 106, record from Phou Samsoum, Xiengkhouang, Laos; Monastyrskii & Devyatkin, 2015: 73.

Coladenia fenestrata Devyatkin, 2008: 279 (type locality: Hoang Lien N.R., Thac Bac, Lao Cai, N Vietnam), fig. 1 for ♂ genitalia, col. pl. 20, figs.1-2 & 7 for habitus. Synonymized by Devyatkin (2012)

Material. ♂ holotype (K. Maruyama collection, will be deposited in The Research Institute of Evolutionary Biology, Tokyo), Phu Pan, near Xamneua, N Laos, 1858 m, 23.III.2001; 1 ♂ paratype, same data as holotype; 1 ♂ (coll. K. Saito; photos), Mt. Bia, Xiang Khouang, N Laos, 29.III.2007.



FIGURES 11–20. Male genitalia of *C. wenhaoi* **sp. n.** and *C. koiwayai*: **11 & 16** whole genitalia in lateral view **12 & 17** whole genitalia in dorsal view with aedeagus removed **13 & 18** juxta **14 & 19** right valva in lateral view **15 & 20** gnathos in ventral view. Scale bar = 1 mm.



FIGURES 21–34. Male genital differences between *Coladenia* spp.: **21–23** aedeagus in lateral view **24–25** aedeagus in dorsal view **26–28** right valva of *C. wenhaoi* **sp. n.** in various views **26** flattened **27** ventrolateral view **28** lateral view **29–30** right valva of *C. chenzhibingi* in lateral view **31–32** uncus and gnathos in posterior view **33–34** Tegumen, uncus and gnathos in lateral view.

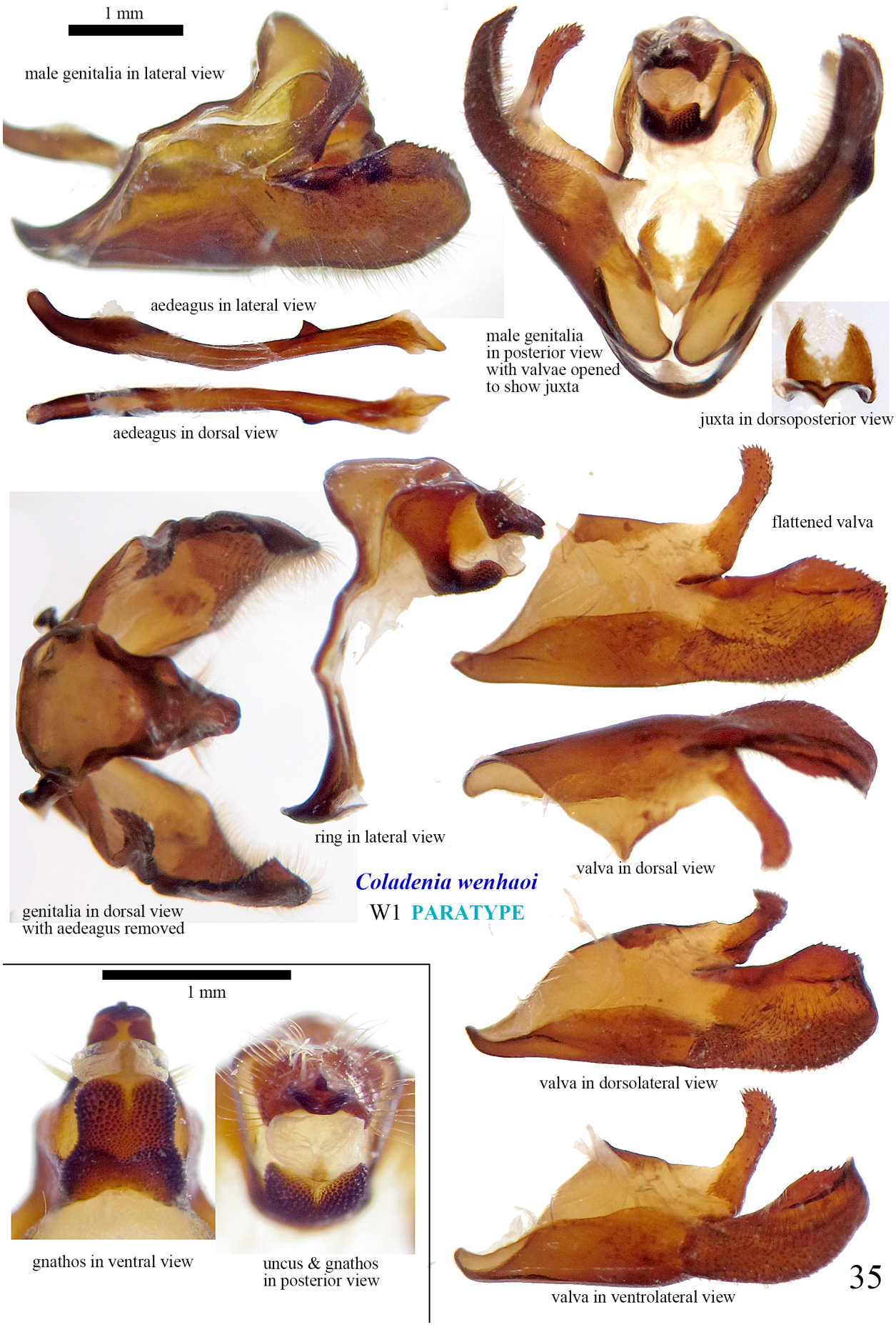


FIGURE 35. Male genitalia of *Coladenia wenhaoi* **sp. n.**, paratype No. W1.

Remarks. *C. koiwayai* is undoubtedly most reminiscent of *C. wenhaoi* **sp. nov.**, as they display the most similar wing patterns and male genitalia structures. Nevertheless, they differ fundamentally in several key characters, as summarized above in the diagnosis of the latter. Furthermore, the colour of the palpi, often playing an important role in differentiating the species in the genus, provides a clear and consistent distinction between the two. Due to these pronounced and discrete discontinuities in both external morphology and genitalia, *C. wenhaoi* **sp. nov.** is not treated as a subspecies of *C. koiwayai*. It is also noteworthy that *C. koiwayai* may potentially be discovered in the future within the Huanglian-shan mountain range in China, as this region is contiguous with its known localities in northern Vietnam.

Coladenia chenzhibingi Huang & Zhu, 2021 陈志兵窗弄蝶

Figs 7, 8, 29, 30

Coladenia chenzhibingi Huang & Zhu, in Huang, 2021: 578 (type locality: Baoxing, Sichuan), figs. for ♂ habitus and ♂ genitalia.

Material. ♂ holotype & 4 ♂ paratypes, Baoxing, Sichuan, V.2008, purchased by Z.-B. Chen.

Remarks. All type specimens of this species were obtained from insect dealers; consequently, its precise geographical distribution requires clarification through future field surveys. While this species is morphologically the closest known relative of *C. wenhaoi* **sp. nov.** within the national range, a detailed morphological analysis reveals that the two are not sister species, as evidenced by the substantial differences in the valvae of their male genitalia.

Acknowledgements

We are deeply indebted to Dr. Wen-Hao Sun and Ms. Lan Zhang for their invaluable roles in facilitating this collaboration. We extend our sincere thanks to Mr. Kiyoshi Maruyama for granting access to the type specimen of *C. koiwayai*, and to Mr. Yutaka Inayoshi for providing additional specimen photographs taken by Mr. T. Saito. Our gratitude also goes to Mr. Yan-Quan Lu for his assistance in collecting two female paratypes.

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Additional information

Author contributions: First author: Conducted all research work, including morphological comparisons, species description, and manuscript preparation. Second author: Collected the holotype. Third author: Collected two male paratypes.

Conflict of interest: The authors have declared that no competing interests exist.

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